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4. Another brachypterous sea-coast form, quite hairy and with colorational peculiarities, has been found at Lake Worth, Florida, and Fortress Monroe, Virginia, as recorded by Dr. L. O. Howard. I do not know whether this is Montandon's *hirtus*.

It seems to the writer that the probability of there being at least three species among the above insects is great enough to deserve serious consideration. If those who have the material will boil up a number of each in caustic potash, and examine the structural characters under the microscope by transmitted light, it is probable that new differences will appear, especially in the male genitalia. If it can be established that the seriously destructive insect of recent years is *B. devastator*, and not *B. leucopterus* at all, and that the former is still migrating eastwards, the fact will not only be of scientific but of economic importance.*

T. D. A. COCKERELL.

MESILLA PARK, N. M.,

November 24, 1898.

Postscript, December 9th. Dr. L. O. Howard writes me: "The eastern form [*leucopterus*] injures many plants, including rice. That it is apparently more resistant to fungus attack, however, was shown in a curious way last summer, when it damaged grass lawns in the heart of the City of Brooklyn in an abnormally wet season and in spite of repeated drenchings from the sprinkler hose."

A Manual of Chemical Analysis, Qualitative and Quantitative. By G. S. NEWTH, Demonstrator in the Royal College of Science, London. New York, Longmans, Green & Co. 1898. Pp. vii + 462.

This book is a decided departure from the usual manuals of qualitative and quantitative analysis. The author has endeavored, and with much success, to present a book which will teach the theoretical as well as the practical side of analytical chemistry and to avoid as far as possible teaching mechanical opera-

tions. He has divided the volume into two parts: Book I., of 136 pages, treating of qualitative analysis; and Book II., giving the methods of gravimetric and volumetric analysis of inorganic substances, including the analysis of the more simple gases, of the determination of carbon, hydrogen, nitrogen, sulphur and the halogens in organic compounds, and of some simple physico-chemical experiments.

The subject of qualitative analysis is treated in a broad way, and the student who follows the text conscientiously will obtain a wide knowledge of general chemistry. The author first shows how the subject can be classified according to the reaction with the group reagents, and then considers the properties of the separate elements. The general chemistry of each of the more common elements is discussed, giving only those properties which are useful for the separation and identification of the elements in analysis, and after having considered the properties of a group of elements there is given a summary of the particular properties which are utilized in separating the members of the group. The general reactions taking place, the properties of the substances and their compounds are so clearly stated and the subject is so logically developed that the qualitative separation of the substances follows naturally, and the quantitative separation is but a step further. This is particularly true of that portion of the book which treats of the oxidation and reduction of iron, chromium and manganese compounds. The reactions of chromium and the separation in the presence of phosphates, which are often difficult points for the student to grasp, are fully and satisfactorily explained. The separation of iron, chromium and aluminium is based upon the oxidation of chromium to chromic acid by sodium peroxide and the solubility of aluminium hydroxide in sodium hydroxide, and should commend itself more favorably than the usual methods of separation for this group. Another point which deserves special mention is the fact that after each group follows an appendix in which the properties of the rarer elements of that group are considered. The concluding chapter of the portion of the book devoted to qualitative analysis is full of sound advice on the in-

* On p. 50 Professor Webster notes that few chinch bugs died from the parasitic fungus in the timothy meadows of northern Ohio. These were the *B. leucopterus*, which, coming from a relatively damp region, may have acquired greater powers of resistance to the fungus attack than *B. devastator*, from the dry prairies of the far West.

telligent interpretation of results and on the cultivation and development of habits of observation.

There are some points on which the author has either not laid enough stress or where a better method of procedure might have been offered. The difficulties produced by the simultaneous presence of chromium and zinc are not mentioned, and it would have been much better to have given here, as an alternative method, the barium carbonate process, not only for the separation of zinc from chromium, but also for the separation in the presence of phosphates. Again the Fresenius method for separating small amounts of barium, calcium and strontium would prove more accurate than the separation by means of potassium chromate and acetic acid. The preliminary tests and operations necessary to get a substance into solution are systematically treated, but no mention is made of fusion with acid potassium sulphate. There are two portions of Book I. which reflect on the intelligence of the student, and the book would have been much better without them, viz.: the tables at the end of each chapter giving an outline of the process; and Chapter I., which treats of filtration, solution, evaporation, fusion, precipitation, ignition and neutralization, processes, which properly belong to experimental general chemistry. If the student had not already been over the ground here given he would not be fitted to begin qualitative analysis.

There will undoubtedly be a difference of opinion concerning that portion of the book devoted to quantitative analysis, particularly in regard to the selection of the gravimetric analyses and to the details necessary to carry them out. After the preliminary operations of weighing and preparation of pure salts the gravimetric determination of the more common metals and acids is studied in detail, and then follows a chapter on the determination of the constituents of silver coin, solder, German silver, bronze, dolomite, zinc blende and an insoluble silicate containing the alkalis. The well known typical methods of volumetric analysis are given. By excluding many descriptive details and by conciseness and clearness of expression the author has condensed a

great deal into this portion of the book, which, if followed under the guidance of an instructor, should give any student a good general knowledge of quantitative methods.

Following the gravimetric and volumetric methods, the physico-chemical methods for the determination of specific gravity, boiling point, melting point and vapor density are given. The author could very advantageously, and should, have included here the determination of molecular weights by boiling- or freezing-point methods, and then followed it by a brief *résumé* of the more recent applications of theoretical chemistry to quantitative analysis. Such a chapter would have been in harmony with the rest of the book and would have increased its value greatly.

In his preface the author says, "I have carefully avoided the use of those symbolic abbreviated expressions, such as $H_2\bar{O}$ (oxalic acid), $H_2\bar{T}$ (tartaric acid)," etc., and nevertheless he uses the formula 'Cy' instead of CN, offering as an excuse that 'Cy' is a recognized and convenient symbol for the radical (CN) cyanogen. He is further inconsistent in the uses of the doubled formulæ for the hydroxides of iron, chromium and aluminium, as $Fe_2(OH)_6$, etc., while perhaps in the same equation he will use the single formula for the chloride $FeCl_3$.

The author it seems takes unusual precautions in igniting filter papers apart from the main portion of the precipitate. This tedious operation might have been avoided in many cases by the use of the Gooch crucible, which receives no mention.

As a whole the book is remarkably free from objectionable points, and is a distinct advance in the scientific treatment of analytical chemistry.

HENRY FAY.

RECENT PUBLICATIONS OF THE U. S. GEOLOGICAL SURVEY.

THE following bulletins have been recently issued by the U. S. Geological Survey:

Bulletin 89. 'Some Lava Flows of the Western Slope of the Sierra Nevada, California,' F. L. Ransome.

The author describes a series of lava sheets, one of which forms the celebrated Table Moun-